What is claimed is:

1. A radiation image recording and read-out method, comprising the steps of:

i) supporting a stimulable phosphor sheet at a position for image recording, at which one surface of the stimulable phosphor sheet is exposed to radiation,

ii) exposing the one surface of the stimulable phosphor sheet, which is supported at the position for image recording, to the radiation, a radiation image being thereby stored on the stimulable phosphor sheet,

iii) performing an image read-out operation from a side of the other surface of the stimulable phosphor sheet supported at the position for image recording, which other surface is opposite to the one surface of the stimulable phosphor sheet exposed to the radiation, the image read-out operation being performed by irradiating stimulating rays in two-dimensional directions to the stimulable phosphor sheet, on which the radiation image has been stored during its exposure to the radiation, the stimulating rays causing the stimulable phosphor sheet to emit light in proportion to an amount of energy stored thereon during its exposure to the radiation, and photoelectrically detecting the emitted light, an image signal, which represents the radiation image having been stored on the stimulable phosphor sheet, being thereby obtained, and

iv) releasing energy, which remains on the stimulable phosphor sheet after the image signal has been obtained from the

stimulable phosphor sheet, by irradiating erasing light to an entire area of the stimulable phosphor sheet with a sheet-shaped erasing light source, the sheet-shaped erasing light source being located in close vicinity to the stimulable phosphor sheet and on a side of the one surface of the stimulable phosphor sheet supported at the position for image recording, which one surface is exposed to the radiation, the sheet-shaped erasing light source having uniform transmissivity to the radiation.

2. A method as defined in Claim 1 wherein the sheet-shaped erasing light source comprises an organic electroluminescence device.

3. A method as defined in Claim 1 wherein the sheet-shaped erasing light source comprises a transparent sheet, which has light diffusing properties, the transparent sheet being capable of radiating out the erasing light from a surface, which stands facing the stimulable phosphor sheet, toward the stimulable phosphor sheet, and

light sources, each of which is located at one of two ends of the transparent sheet and produces the erasing light such that the erasing light enters from the one end of the transparent sheet into the transparent sheet.

4. A method as defined in Claim 3 wherein at least either one of two surfaces of the transparent sheet is formed as a light diffusing surface.

5. A method as defined in Claim 3 wherein the transparent sheet contains light diffusing particles dispersed

therein.

6. A method as defined in Claim 3, 4, or 5 wherein the stimulable phosphor sheet comprises a sheet-shaped transparent substrate and a stimulable phosphor layer overlaid on the sheet-shaped transparent substrate, and

the transparent sheet of the sheet-shaped erasing light source acts also as the sheet-shaped transparent substrate of the stimulable phosphor sheet.

7. A method as defined in Claim 1, 2, 3, 4, or 5 wherein the stimulable phosphor sheet is kept stationary at the position for image recording, and

the image read-out operation is performed with a read-out unit for irradiating the stimulating rays to the stimulable phosphor sheet in a one-dimensional direction along a main scanning direction and detecting the light, which is emitted by the stimulable phosphor sheet when the stimulating rays are irradiated to the stimulable phosphor sheet in the one-dimensional direction, the read-out unit being moved in a sub-scanning direction.

8. A method as defined in Claim 7 wherein the read-out unit comprises a linear stimulating ray source, which linearly irradiates the stimulating rays to an area of the stimulable phosphor sheet, and

a line sensor, which is located along the linear area of the stimulable phosphor sheet exposed to the linear stimulating rays and photoelectrically detects the light emitted by the

stimulable phosphor sheet when the stimulating rays are irradiated to the stimulable phosphor sheet.

9. A radiation image recording and read-out apparatus, comprising:

i) an image recording section for supporting a stimulable phosphor sheet at a position for image recording, at which one surface of the stimulable phosphor sheet is exposed to radiation,

ii) image read-out means located on a side of the other surface of the stimulable phosphor sheet supported at the position for image recording, which other surface is opposite to the one surface of the stimulable phosphor sheet exposed to the radiation, the image read-out means performing an image read-out operation by irradiating stimulating rays in two-dimensional directions to the stimulable phosphor sheet, on which a radiation image has been stored during its exposure to the radiation, the stimulating rays causing the stimulable phosphor sheet to emit light in proportion to an amount of energy stored thereon during its exposure to the radiation, and photoelectrically detecting the emitted light, an image signal, which represents the radiation image having been stored on the stimulable phosphor sheet, being thereby obtained, and

iii) a sheet-shaped erasing light source located in close vicinity to the stimulable phosphor sheet and on a side of the one surface of the stimulable phosphor sheet supported at the position for image recording, which one surface is exposed

to the radiation, the sheet-shaped erasing light source having uniform transmissivity to the radiation, the sheet-shaped erasing light source releasing energy, which remains on the stimulable phosphor sheet after the image signal has been obtained from the stimulable phosphor sheet, by irradiating erasing light to an entire area of the stimulable phosphor sheet.

10. An apparatus as defined in Claim 9 wherein the sheet-shaped erasing light source comprises an organic electroluminescence device.

11. An apparatus as defined in Claim 9 wherein the sheet-shaped erasing light source comprises a transparent sheet, which has light diffusing properties, the transparent sheet being capable of radiating out the erasing light from a surface, which stands facing the stimulable phosphor sheet, toward the stimulable phosphor sheet, and

light sources, each of which is located at one of two ends of the transparent sheet and produces the erasing light such that the erasing light enters from the one end of the transparent sheet into the transparent sheet.

12. An apparatus as defined in Claim 11 wherein at least either one of two surfaces of the transparent sheet is formed as a light diffusing surface.

13. An apparatus as defined in Claim 11 wherein the transparent sheet contains light diffusing particles dispersed therein.

14. An apparatus as defined in Claim 11, 12, or 13

wherein the stimulable phosphor sheet comprises a sheet-shaped transparent substrate and a stimulable phosphor layer overlaid on the sheet-shaped transparent substrate, and

the transparent sheet of the sheet-shaped erasing light source acts also as the sheet-shaped transparent substrate of the stimulable phosphor sheet.

15. An apparatus as defined in Claim 9, 10, 11, 12, or 13 wherein the stimulable phosphor sheet is kept stationary at the position for image recording, and

the image read-out means comprises:

a) a read-out unit for irradiating the stimulating rays to the stimulable phosphor sheet in a one-dimensional direction along a main scanning direction and detecting the light, which is emitted by the stimulable phosphor sheet when the stimulating rays are irradiated to the stimulable phosphor sheet in the one-dimensional direction, and

b) unit moving means for moving the read-out unit in a sub-scanning direction.

16. An apparatus as defined in Claim 15 wherein the read-out unit comprises a linear stimulating ray source, which linearly irradiates the stimulating rays to an area of the stimulable phosphor sheet, and

a line sensor, which is located along the linear area of the stimulable phosphor sheet exposed to the linear stimulating rays and photoelectrically detects the light emitted by the stimulable phosphor sheet when the stimulating rays are

irradiated to the stimulable phosphor sheet.